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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
LEUNG, JENNIFER A

ART UNIT	PAPER NUMBER
1764	18

DATE MAILED: 08/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/877,249	BECKER ET AL.	
	Examiner	Art Unit	
	Jennifer A. Leung	1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 May 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7,10-16,18-20,47-60 and 62-64* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,10-16,18-20,47-60 and 62-64* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 25, 2003 has been entered.

Response to Amendment

2. Applicant's amendment filed on May 13, 2003 has been received and carefully considered. Claims 8, 9, 17, 21-46, 61 and 65 are cancelled. Claims 1-7, 10-16, 18-20, 47-60 and 62-64 remain active.

Claim Objections

3. Claim 19 is objected to because the article "a" in line 1 should be omitted for proper grammatical form. Also, the claim improperly depends on cancelled claim 17. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 5 and 51 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contains subject matter which was not

described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In particular, it is unclear as to where the limitation of "one or more outer pipes surrounding a substantial portion of said inlet pipes" is located in the specification and drawings.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-7, 10-16, 18-20, 47-60 and 62-64 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1 and 47 (and their respective depending claims), the recitation of "A reactor... comprising" and "A reactor..." in the preamble is incomplete and non-functional, since the claims lack the recitation of an element for performing the specific function of the reactor, and the scope of the claims is generally directed towards a grid and more than one inlet pipe. It is unclear as to whether the applicants are attempting to claim both a reactor, the grid, and the at least one inlet pipe. Furthermore, it is unclear as to the structural relationship of the grid to the other elements of the apparatus.

Regarding claims 3, 4, 49 and 50, the language of the claims is directed towards a method limitation which renders the claims vague and indefinite, as it is unclear as to the structural limitations applicants are attempting to recite by, "said inert fluid comprises" and "said inert gas is selected from" since "inert fluid" and "inert gas" are not considered elements of the apparatus.

Regarding claims 14 and 58, it is unclear as to the structural limitation applicants are attempting to recite by, "at a distance... such that a potential detonation is avoided", as it is

unclear as to what quantifies such a distance.

Regarding claim 15, "said restriction" lacks proper positive antecedent basis.

Regarding claims 18 and 62, it is unclear as to the structural limitation applicants are attempting to recite by, "the distance... in excess of potential flame length", as it is unclear as to what quantifies such a distance.

Regarding to claims 19 and 63, it is unclear as to the structural limitation applicants are attempting to recite by, "a common end box having an inventory", as it is unclear as to the structural limitation imposed by, "having an inventory".

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-5 and 47-51 are rejected under 35 U.S.C. 102(b) as being anticipated by Iemori et al. (JP 09-159145).

Regarding claims 1 and 47, Iemori (FIG. 1, 2; Abstract; sections [0001], [0005]-[0008]) disclose an apparatus comprising an inlet pipe **1** having an outlet and a surround means (jacket structure **2**) for surrounding a substantial portion of said inlet pipe **1**. Iemori further disclose the inlet pipe **1** is capable of carrying a molecular oxygen-containing gas (industrial use oxygen) and the means for surrounding is capable of carrying a sealed inert fluid (water). The recitation of "wherein the inert fluid surrounding the inlet pipe is provided with a limited supply of inert fluid sufficient to replace minor leaks" (claim 47) provides no further structural limitations, and

therefore the apparatus of Iemori meets the claim. In view of the newly added limitations, Iemori further disclose a conventional embodiment utilizing the inlet pipe **1** disclosed above, wherein more than one inlet pipe (referenced as element **16** in FIG. 3) extends into the apparatus. Additionally, Iemori illustrate a grid (by the two horizontal dashed lines; FIG. 3).

Regarding claims 2 and 48, Iemori further disclose at least 85% of said inlet pipe is surrounded by said surround means (see FIG. 1).

Regarding claims 3-4 and 49-50, although Iemori are silent as to whether said inert fluid may comprise the recited inert gases, the apparatus of Iemori structurally meets the claims, since no further structural limitations are recited, the apparatus is fully capable of flowing an inert gas, and the inert fluid merely constitutes a recitation of intended use, which holds no patentable weight in apparatus claims.

Regarding claims 5 and 51, Iemori further disclose said surround means comprises an outer pipe **2** surrounding a substantial portion of the inlet pipe **1** for a molecular oxygen containing gas and is provided with a supply of inert fluid (FIG. 1, 2; Abstract).

Instant claims 1-5 and 47-51 structurally read on the apparatus of Iemori et al.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1-6, 10, 11, 47-52, 54 and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kittleson et al. (U.S. Re 24,485) in view of Chowdhury et al. (U.S. 4,461,743).

Regarding claims 1 and 47, Kittleson (FIG. 1; column 6, lines 57-68) disclose a reactor **10** comprising a grid **3** and more than one inlet pipe **11** for injecting a molecular oxygen containing gas. However, Kittleson are silent as to whether the more than one inlet pipe **11** may comprise the recited "means for surrounding a substantial portion of the pipe". Chowdhury (FIG. 4) teach an injector for injecting a mixture of pure oxygen or oxygen enriched air into a reactor (defined by wall **26**), wherein the injector comprises an inlet pipe **20** adapted to extend into the reactor, wherein inlet pipe **20** comprises a means (annular space **22**, defined by pipe **20** and a second pipe **21**) for surrounding a substantial portion of the pipe **20** with an inert fluid, wherein the inert fluid surrounding pipe **20** is sealed (column 3, lines 22-31; column 4, lines 15-40). It would have been obvious for one having ordinary skill in the art at the time the invention was made to provide the surround means of Chowdhury to the more than one inlet pipe in the apparatus of Kittleson because the surround means creates a thermal insulating barrier for the oxygen within the inlet pipes, thereby alleviating the phenomenon of "flow reversal" caused by the high evaporation rates of oxygen, to maintain a continuous, positive flow of oxygen into the reactor, as taught by Chowdhury (column 6, lines 6-14; column 1, lines 12-27). Also, the recitation of "wherein the inert fluid surrounding the inlet pipe is provided with a limited supply of inert fluid sufficient to replace minor leaks" (claim 47) provides no further structural limitations, and therefore the modified apparatus of Kittleson meets the claim.

Regarding claims 2 and 48, Chowdhury further teach said surround means **21**, **22** surrounds at least 85% of the inlet pipe **20** (see FIG. 4).

Regarding claims 3-4 and 49-50, no further structural limitations are recited since the specific inert fluid used is not considered an element of the apparatus, and therefore the modified apparatus of Kittleson meets the claims. In any event, Chowdhury teach the inert fluid for the surround means may comprise nitrogen, carbon dioxide, and air (column 4, lines 25-31).

Regarding claims 5 and 51, Chowdhury further teach said means for surrounding comprises one or more outer pipes (i.e., second pipe **21**; FIG. 4) surrounding a substantial portion of said inlet pipes and provided with a supply of inert fluid (column 4, lines 20-25).

Regarding claims 6 and 52, the specification (page 4, lines 5-7) recites, "... differential expansion means may include *bends* in the inlet pipe and/or pigtails." Kittleson disclose bends in inlet pipes **11** (FIG. 1). Also, Chowdhury (FIG. 4) teach a bend in the inlet pipe **20** and surround means **21**, **22**.

Regarding claims 10, 11, 54 and 55, the collective teachings of Kittleson and Chowdhury further disclose means for suppressing ingress or "backflow" to the inlet pipe from the reactor, wherein said ingress suppression means comprises means for providing gas in said inlet pipe at a higher pressure than the pressure of the reactor (i.e., means for maintaining a "continuous positive flow" in the oxygen line; Chowdhury, column 6, lines 6-14, column 1, lines 12-27).

8. Claims 7 and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kittleson et al. (U.S. Re 24,485) in view of Chowdhury et al. (U.S. 4,461,743), as applied to claims 1 and 47 above, and further in view of Takeuchi et al. (JP 55-36673).

Regarding claims 7 and 53, the collective teachings of Kittleson et al. and Chowdhury et al. are silent as to whether the inlet pipes may further comprise a means for detecting a change in pressure of the inert fluid surround the inlet pipes. Takeuchi et al. (Abstract; Figure) teach a

double-tube pipeline comprising an inner tube **1** and an outer tube 2, wherein the pipeline comprises means for detecting a change in pressure of the fluid **b** located in the annular region between pipes **1** and **2** (i.e., in the case of a detected leakage) and thereby increasing the pressure of the fluid **b** such that it diffuses into the fluid **a** being conveyed by inner pipe **1**. It would have been obvious for one of ordinary skill in the art at the time the invention was made to provide such means to the modified apparatus of Kittleson et al. because the pressure change detecting means would enable the detection of a leak within the inlet pipes and enable the signal for the diffusion of the conveyed fluid upon detection of the leakage, as taught by Takeuchi et al.

9. Claims 12-16 and 56-60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kittleson et al. (U.S. Re 24,485) in view of Chowdhury et al. (U.S. 4,461,743), as applied to claims 1, 10, 47 and 54 above, and further in view of Walters et al. (U.S. 4,582,120).

Regarding claims 12, 13, 56 and 57, the collective teachings of Kittleson and Chowdhury are silent as to whether the inlet pipes may comprise a restriction, wherein the restriction comprises an orifice. Walters teach a plurality of inlet pipes (lances **20**, **21**; FIG. 1), wherein each inlet pipe is provided with a restriction in the form of an orifice (see FIG. 2). It would have been an obvious design choice for one of ordinary skill in the art at the time the invention was made to provide such a restriction to the inlet pipes in the modified apparatus of Kittleson, on the basis of suitability for the intended use, because the restriction/orifice enables the control of the pressure drop within the pipes, as taught by Walters (column 10, lines 15-30, 39-48).

Regarding claims 14-16 and 58-60, although the collective teachings of Kittleson, Chowdhury and Walters are silent as to whether the restriction may be located at the specifically recited locations, it would have been an obvious design choice for one of ordinary skill in the art

at the time the invention was made to select an appropriate location for the restriction in the modified apparatus of Kittleson, on the basis of suitability for the intended use, since shifting location of parts was held to have been obvious. *In re Japikse,* 181 F.2d 1019, 1023, 86 USPQ 70, 73 (CCPA 1950), and where the general conditions of a claim are disclosed in the prior art, discovering optimum or workable ranges involves only routine skill in the art, *In re Aller, 105 USPQ 233.*

10. Claims 18 and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kittleson et al. (U.S. Re 24,485) in view of Chowdhury et al. (U.S. 4,461,743), as applied to claims 1 and 47 above, and further in view of Wagner et al. (U.S. 5,801,265).

Regarding claims 18 and 62, the collective teachings of Kittleson and Chowdhury are silent as to whether the distance between inlet pipes is significantly in excess of the potential flame length. Wagner disclose reactor **36** comprising a plurality of oxygen gas inlets **60**, wherein the inlets **60'**, **60"** are positioned such that the distance **D** between inlets **60'**, **60"** is significantly in excess of a potential flame length (FIG. 3; column 4, lines 15-38). It would have been obvious for one of ordinary skill in the art at the time the invention was made to configure the inlet pipes at a distance significantly in excess of the potential flame length in the modified apparatus of Kittleson because such arrangement provides an improved system for introducing oxygen containing gas that avoids explosions, deflagration, or other anomalous process conditions, as taught by Wagner (column 2, lines 13-18).

11. Claims 19, 20, 63 and 64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kittleson et al. (U.S. Re 24,485) in view of Chowdhury et al. (U.S. 4,461,743), as applied to claims 1 and 47 above, and further in view of Marshall, Jr. (U.S. 2,654,658).

Regarding claims 19 and 63, the collective teachings of Kittleson and Chowdhury are silent as to a manifold means, or specifically a "common end box" for supplying the oxygen containing gas to the inlet pipes. In any event, it would have been an obvious design choice for one of ordinary skill in the art at the time the invention was made to provide such to the modified apparatus of Kittleson, on the basis of suitability for the intended use, since the provision of manifolds for supplying reagents to a reaction zone is conventionally known in the art, as evidenced by Marshall, Jr. To illustrate, Marshall, Jr. teaches a reactor **10** (FIG. 2) comprising a plurality of inlet pipes **30** for injecting a reagent into the fluidized bed, wherein the inlet pipes **30** are each connected to pipe **31**, wherein pipe **31** defines a manifold or "common end box" to feed reagent from a common supply source (not shown).

Regarding claims 20 and 64, the collective teachings of Kittleson and Chowdhury are silent as to whether each of said inlet pipes may comprise a flow restriction means. In any event, it would have been an obvious design choice for one of ordinary skill in the art at the time the invention was made to provide such means to the modified apparatus of Kittleson, on the basis of suitability for the intended use, since the provision of flow restriction means to control the feed rate of reagents to a reaction zone is well known in the art, as evidenced by Marshall, Jr. To illustrate, Marshall, Jr. teach a reactor 10 (FIG. 2) comprising a plurality of inlet pipes **30** for injecting a reagent into the fluidized bed, wherein each of the inlet pipes **30** is provided with a respective flow restriction means (shown as individual control valves).

Response to Arguments

12. Regarding the 35 U.S.C. 112, 2nd paragraph, rejection made above for claims 1 and 47 (and depending claims), please note that although the limitation, "said reactor being a fluid bed

reactor" has been added to claims 1 and 47 in an attempt to provide completeness and functionality to the claims, a preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

13. Applicant's arguments with respect to claims 1-7, 10-16, 18-20, 47-60 and 62-64 have been considered but are moot in view of the new grounds of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A. Leung whose telephone number is 703-305-4951. The examiner can normally be reached on 8:30 am - 5:30 pm M-F, every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola can be reached on 703-308-6824. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Jennifer A. Leung
August 18, 2003

Hien Tran

HIEN TRAN
PRIMARY EXAMINER